REPLACEMENT SHEET
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Title: Printer With Radio Or Television Program Extraction
And Formatting
Inventors: Jonathan J. Hull, et al.
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100

Radio or TV Receiver
(e.g., Cable TV Set Top Box)

104

108

106

102

103 Conventional Printer

110 Control Software For Radio Or TV Receiver

112 Audio And Video Content Recognition Software (e.g., Speech Recognition, OCR, etc.)

114 Processing Logic Including Video Paper Generation, Print Driver Interface

116 Digital Media Storage And Output, Including Network Interface, DVD, SD, etc.

118 User Interaction And Control Hardware (e.g., Infrared, 802.11, Bluetooth, etc.)

122

Every FRIDAY print
WEEKLY SCHEDULE of
WEST WING

Video Paper

Television Program Schedule
The West Wing
Week of Nov. 24,, 2993

130

Bravo (Ch. 48) Mon. Nov. 24 7:00 PM

132 play #739 136

record #423

CBS (Ch. 11) Mon. Nov. 26 9:00 PM

132 play #263 140
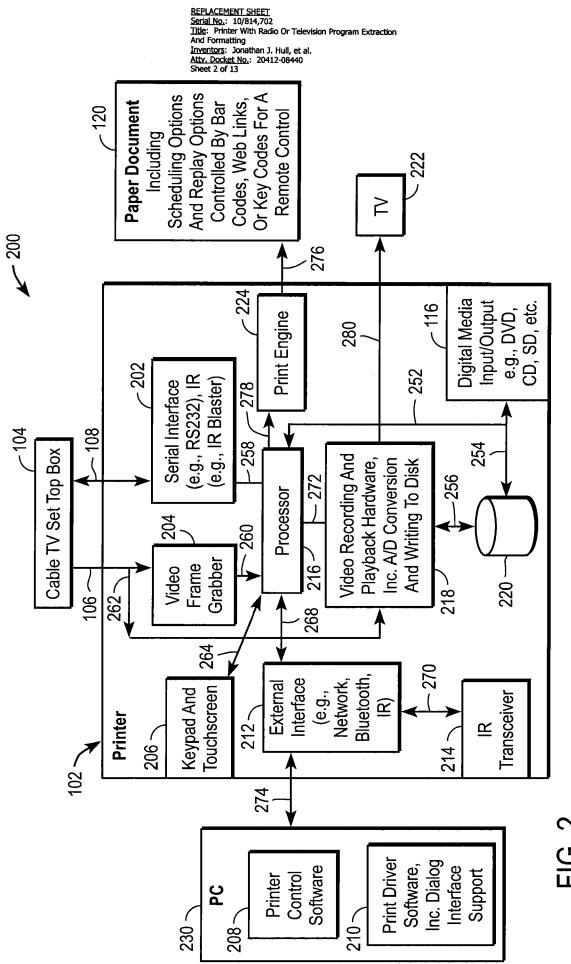
record #799

134

120

FIG. 1

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Paper Document 120
Including Scheduling Options And Replay Options Controlled By Bar Codes, Web Links, Or Key Codes For A Remote Control

TV 222

200

Cable TV Set Top Box 104

Printer 102

Serial Interface (e.g., RS232), IR (e.g., IR Blaster) 202

Video Frame Grabber 204

Processor 216

Print Engine 224

Video Recording And Playback Hardware, Inc. A/D Conversion And Writing To Disk 218

Digital Media Input/Output e.g., DVD, CD, SD, etc. 116

Keypad And Touchscreen 206

External Interface (e.g., Network, Bluetooth, IR) 212

IR Transceiver 214

PC 230

Printer Control Software 208

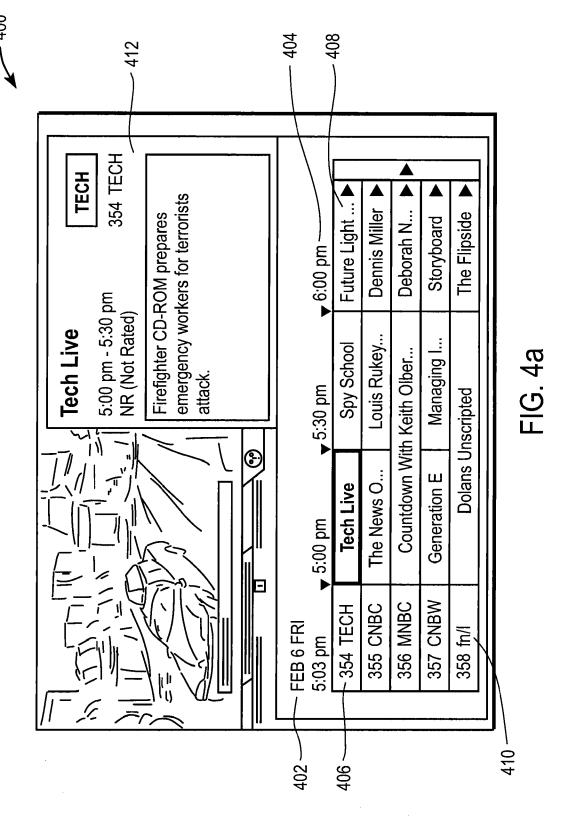Print Driver Software, Inc. Dialog Interface Support 210

FIG. 2

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300

```
<RICOH - VIDEO - RECORDER - PRINTER - AFICIO - 6534VR.

    <CHANNELS>
        <SCHEDULE - CHANNEL>028</SCHEDULE - CHANNEL>

    </CHANNELS>

    <SCHEDULE_UPDATE_TIME>0200  GMT  daily</SCHEDULE - UPDATE - TIME>

    <COMMAND - SYNTAX>
        <CHANGE - CHANNEL>#32</CHANGE - CHANNEL>
        <SCHEDULE - FORWARD>#45</SCHEDULE - FORWARD>
        <SCHEDULE - BACKWARD>#46</SCHEDULE - BACKWARD>
        <CHANNEL - FORWARD>#22</CHANNEL - FORWARD>
        <CHANNEL - BACKWARD >#23</CHANNEL - BACKWARD >
        . . .
    </ COMMAND - SYNTAX>

    <LAYOUT - DESCRIPTION>
        <SCHEDULE - CHANNEL>
            <DIMS><X>0</X><Y>0</Y><WIDE>640</WIDE><HI>480</HI></DIMS>
            <DIMS><X>0</X><Y>0</Y><WIDE>640</WIDE><HI>480</HI></DIMS>
            <BEGIN_N><X>320</X><Y>50</Y><WIDE>50</WIDE><HI>20</HI></BEGIN_N>
            <END_N><X>390</X><Y>50</Y><WIDE>50</WIDE><HI>20</HI></END_N>
            <NO_N><X>500</X><Y>60</Y><WIDE>40</WIDE><HI>20</HI></NO_N>
            <ID_N><X>540</X><Y>60</Y><WIDE>40</WIDE><HI>20</HI></ID_N>
            <PROG_DESC><X>320</X><Y>100</Y><WIDE>280</WIDE><HI>80</HI></PROG_DESC>
            <TIME1><X>150</X><Y>200</Y><WIDE>80</WIDE><HI>20</HI></TIME1>
            <TIME2><X>280</X><Y>200</Y><WIDE>80</WIDE><HI>20</HI></TIME2>
            <TIME3><X>400</X><Y>200</Y><WIDE>80</WIDE><HI>20</HI></TIME3>
            <NO_1><X>60</X><Y>230</Y><WIDE>40</WIDE><HI>30</HI></NO_1>
            <ID_1><X>0</X><Y>230</Y><WIDE>40</WIDE><HI>30</HI></ID_1>
            <PROGS_1><X>0</X><Y>230</Y><WIDE>350</WIDE><HI>30</HI></PROGS_1>
            . . .
        </SCHEDULE_CHANNEL>
        . . .
    </LAYOUT - DESCRIPTION>

    . . .
<RICOH - VIDEO - RECORDER - PRINTER - AFICIO - 6534VR.
```
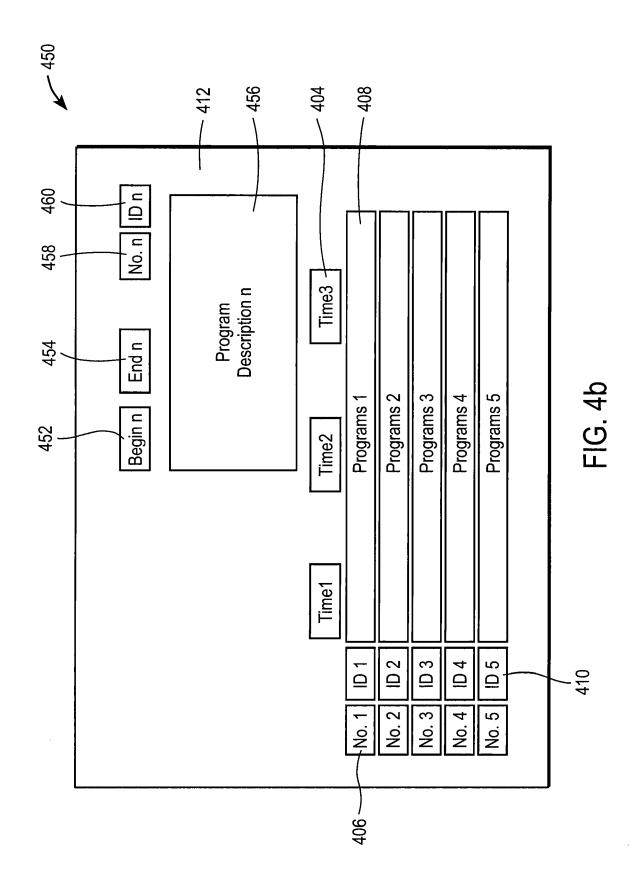
FIG. 3

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FIG. 4a

Tech Live
TECH

5:00 pm - 5:30 pm
NR (Not Rated)

354 TECH

Firefighter CD-ROM prepares emergency workers for terrorists attack.

FEB 6 FRI
5:03 pm

	▶ 5:00 pm	▶ 5:30 pm	▶ 6:00 pm
354 TECH	**Tech Live**	Spy School	Future Light ... ▲
355 CNBC	The News O...	Louis Rukey...	Dennis Miller ▲
356 MNBC	Countdown With Keith Olber...		Deborah N... ▲
357 CNBW	Generation E	Managing I...	Storyboard ▲
358 fn/I	Dolans Unscripted		The Flipside ▲

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450

460 | ID n

458 | No. n

454 | End n

452 | Begin n

412

456 | Program Description n

404 | Time3

408 | Programs 1

Time2

Programs 2

Programs 3

Programs 4

Programs 5

Time1

406 | No. 1 | No. 2 | No. 3 | No. 4 | No. 5

410 | ID 1 | ID 2 | ID 3 | ID 4 | ID 5

FIG. 4b

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500

406	410	452	454	408	502
Channel	ID	Begin Time	End Time	Title	Description
354	TECH	5:00 pm	5:30 pm	Tech Live	Firefighter CD...
354	TECH	5:30 pm	6:00 pm	Spy School	...
354	TECH	6:00 pm	7:00 pm	Future Light	...
355	CNBC	5:00 pm	5:30 pm	The News	...
355	CNBC	5:30 pm	6:00 pm	Louis Rukeyser	...
355	CNBC	6:00 pm	7:00 pm	Dennis Miller	...
356	MNBC	5:00 pm	6:00 pm	Countdown with Keith	...
356	MNBC	6:00 pm	7:00 pm	Deborah Norville	...
357	CNBW	5:00 pm	5:30 pm	Generation E	...
357	CNBW	5:30 pm	6:00 pm	Managing I	...
357	CNBW	6:00 pm	6:30 pm	Storyboard	...
358	fn/I	5:00 pm	6:00 pm	Dolans Unscripted	...
358	fn/I	6:00 pm	7:00 pm	The Flipside	...

FIG. 5

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Update Schedule Command

602 — Change Channel To Schedule Channel

604 — Read Profile, Lookup Schedule Channel

606 — Grab Video Frame

608 — OCR, Possibly With Information About The Expected Format Of The Schedule Frame

610 — Read Profile, Lookup Layout Of Schedule Channel

612 — Update The Schedule Database

614

616 — Advance The Schedule Display

618 — Read Profile, Lookup Schedule-forward And Change Channel Commands

620 — Was The Schedule Advanced?

Yes

No

622

FIG. 6

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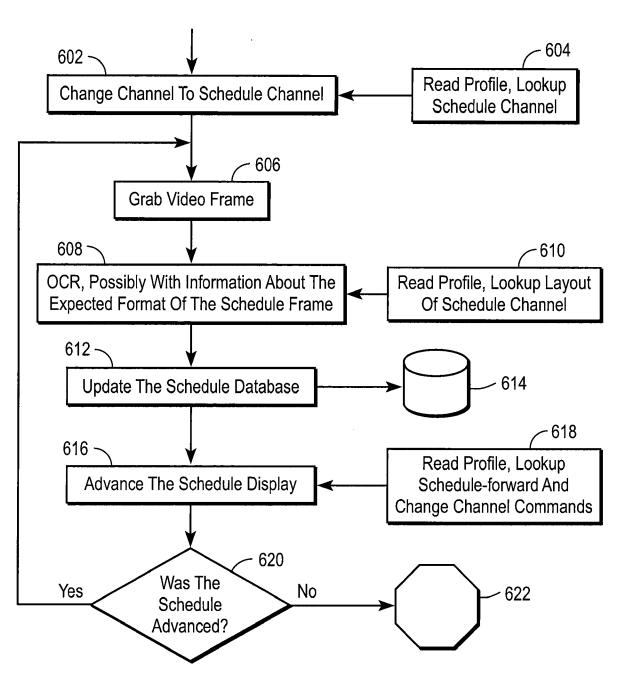Sheet 8 of 13

Update The Schedule Database Command

```
                                              ┌─ 702
              ┌──────────────────────────────┐
              │  Get Next (Channel No., Channel ID,
              │  Begin Time, End Time, Title,
              │  Description) From List Of OCR
              │  Results
              └──────────────────────────────┘
                           │
                           ▼
                    ╱ Result ╲        Yes      ┌──────────┐
                   ╱  Empty?  ╲ ────────────▶  │  Return  │
                    ╲        ╱                 └──────────┘
                           │ No
                           ▼            ┌─ 704
              ┌──────────────────────────────┐           ┌────┐
              │  Barcode_ID = Barcode_ID + 1  │ ────────▶ │    │ ─ 710
              └──────────────────────────────┘           └────┘
                           │
                           ▼            ┌─ 708
              ┌──────────────────────────────┐
              │  Add (Barcode_ID, Channel No,
              │  Channel ID, Begin Time, End Time,
              │  Title, Description) To Database
              └──────────────────────────────┘
```

FIG. 7

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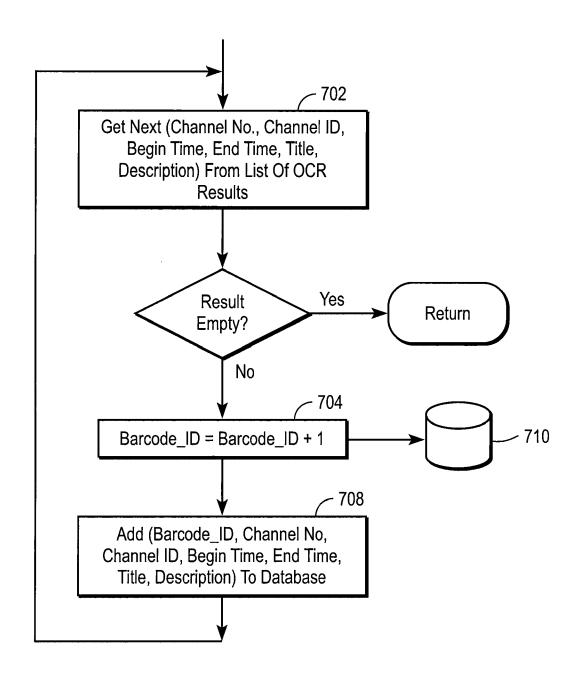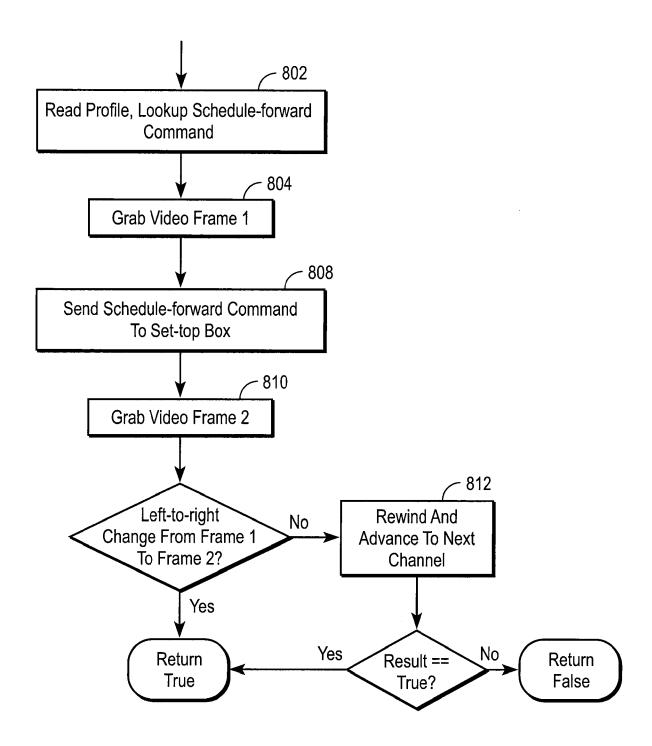Sheet 9 of 13

Advance The Schedule Display Command

802

Read Profile, Lookup Schedule-forward
Command

804

Grab Video Frame 1

808

Send Schedule-forward Command
To Set-top Box

810

Grab Video Frame 2

Left-to-right
Change From Frame 1
To Frame 2?

No → 812

Rewind And
Advance To Next
Channel

Yes

Return
True

Yes ← Result ==
True? → No
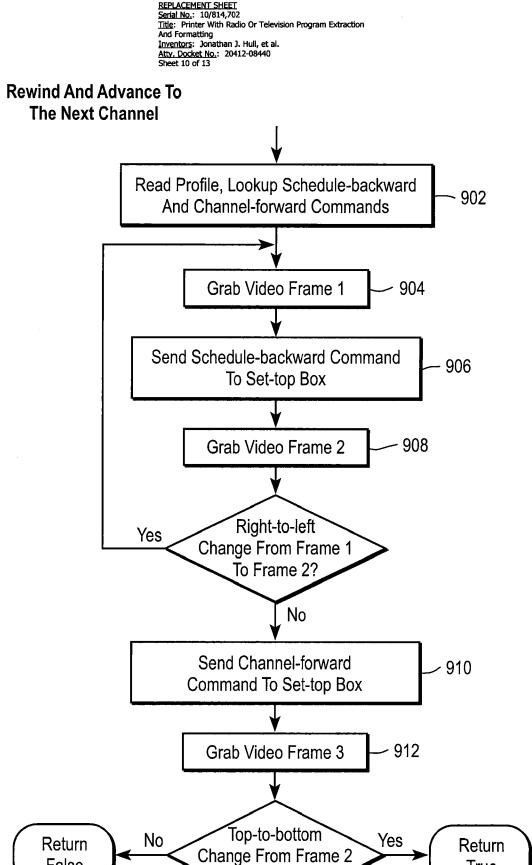
Return
False

FIG. 8

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**Rewind And Advance To
The Next Channel**

Read Profile, Lookup Schedule-backward
And Channel-forward Commands — 902

Grab Video Frame 1 — 904

Send Schedule-backward Command
To Set-top Box — 906

Grab Video Frame 2 — 908

Right-to-left
Change From Frame 1
To Frame 2?
Yes

No

Send Channel-forward
Command To Set-top Box — 910

Grab Video Frame 3 — 912

Top-to-bottom
Change From Frame 2
To Frame 3?
No → Return False
Yes → Return True

FIG. 9

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PrintTV Schedule — 1000

1002

FIG. 10

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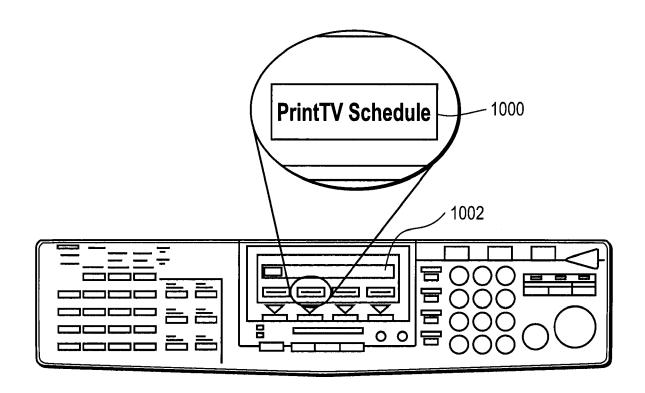Atty. Docket No.: 20412-08440
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Print Schedule Command

Read Today's Date And Current Time From The System Clock — 1102

1104 — Read SCHEDULE-RECORD And PLAY Codes From The BARCODE-COMMANDS Section

Profile (See Fig. 3 For An Example)

1108

1106 — Retrieve All (Barcode_ID, Channel_No, Channel_ID, Begin Time, Title, Description) Tuples For Programs Scheduled Today That Are Currently Playing Or Will Start Later On

Schedule Database

For Each Channel_No In The Tuple List — 1110

Finished? — Yes → Return

No

Page Header = Channel_No And Channel_ID — 1112

For each (Barcode_ID, Begin Time, End Time, Title, Description) — 1114

Yes ← Finished?

No

Generate Barcode With SCHEDULE_RECORD And PLAY Codes Added To Barcode_ID — 1116

Print Line Showing Begin_Time, End Time, Title, Description, And Bar Codes That Schedule A Program To Be Recorded And Play A Previously Recorded Version Of The Corresponding Program — 1118

FIG. 11

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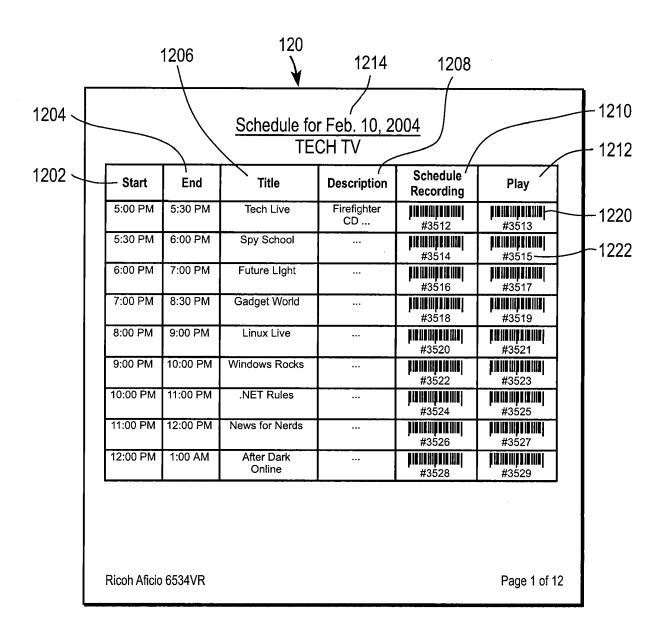Atty. Docket No.: 20412-08440
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120

1206   1214   1208

1204   1210

1212

1202

Schedule for Feb. 10, 2004
TECH TV

Start	End	Title	Description	Schedule Recording	Play
5:00 PM	5:30 PM	Tech Live	Firefighter CD ...	‖‖‖‖‖‖‖‖ #3512	‖‖‖‖‖‖‖‖ #3513
5:30 PM	6:00 PM	Spy School	...	‖‖‖‖‖‖‖‖ #3514	‖‖‖‖‖‖‖‖ #3515
6:00 PM	7:00 PM	Future LIght	...	‖‖‖‖‖‖‖‖ #3516	‖‖‖‖‖‖‖‖ #3517
7:00 PM	8:30 PM	Gadget World	...	‖‖‖‖‖‖‖‖ #3518	‖‖‖‖‖‖‖‖ #3519
8:00 PM	9:00 PM	Linux Live	...	‖‖‖‖‖‖‖‖ #3520	‖‖‖‖‖‖‖‖ #3521
9:00 PM	10:00 PM	Windows Rocks	...	‖‖‖‖‖‖‖‖ #3522	‖‖‖‖‖‖‖‖ #3523
10:00 PM	11:00 PM	.NET Rules	...	‖‖‖‖‖‖‖‖ #3524	‖‖‖‖‖‖‖‖ #3525
11:00 PM	12:00 PM	News for Nerds	...	‖‖‖‖‖‖‖‖ #3526	‖‖‖‖‖‖‖‖ #3527
12:00 PM	1:00 AM	After Dark Online	...	‖‖‖‖‖‖‖‖ #3528	‖‖‖‖‖‖‖‖ #3529

1220

1222

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FIG. 12